

#2

OIPE

## RAW SEQUENCE LISTING

DATE: 07/06/2001

PATENT APPLICATION: US/09/885,723

TIME: 11:52:48

Input Set : A:\Mtc6782\l.txt

Output Set: N:\CRF3\07062001\I885723.raw

3 <110> APPLICANT: Monsanto Company  
 5 <120> TITLE OF INVENTION: TRANSGENIC PLANTS CONTAINING ALTERED LEVELS OF STEROID  
 COMPOUNDS

7 <130> FILE REFERENCE: MTC6783.1  
 C--> 9 <140> CURRENT APPLICATION NUMBER: US/09/885,723  
 C--> 9 <141> CURRENT FILING DATE: 2001-06-20

**ENTERED**  
 see page 5

9 <160> NUMBER OF SEQ ID NOS: 33  
 11 <170> SOFTWARE: PatentIn version 3.0  
 13 <210> SEQ ID NO: 1  
 14 <211> LENGTH: 585  
 15 <212> TYPE: PRT  
 16 <213> ORGANISM: Arabidopsis thaliana  
 18 <400> SEQUENCE: 1  
 20 Met Lys Pro Phe Val Ile Arg Asn Leu Pro Arg Phe Gln Ser Thr Leu  
 21 1 5 10 15  
 23 Arg Ser Ser Leu Leu Tyr Thr Asn His Arg Pro Ser Ser Arg Phe Ser  
 24 20 25 30  
 26 Leu Ser Thr Arg Arg Phe Thr Thr Gly Ala Thr Tyr Ile Arg Arg Trp  
 27 35 40 45  
 29 Lys Ala Thr Ala Ala Gln Thr Leu Lys Leu Ser Ala Val Asn Ser Thr  
 30 50 55 60  
 32 Val Met Met Lys Pro Ala Lys Ile Ala Leu Asp Gln Phe Ile Ala Ser  
 33 65 70 75 80  
 35 Leu Phe Thr Phe Leu Leu Leu Tyr Ile Leu Arg Arg Ser Ser Asn Lys  
 36 85 90 95  
 38 Asn Lys Lys Asn Arg Gly Leu Val Val Ser Gln Asn Asp Thr Val Ser  
 39 100 105 110  
 41 Lys Asn Leu Glu Thr Glu Val Asp Ser Gly Thr Asp Val Ile Ile Val  
 42 115 120 125  
 44 Gly Ala Gly Val Ala Gly Ser Ala Leu Ala His Thr Leu Gly Lys Glu  
 45 130 135 140  
 47 Gly Arg Arg Val His Val Ile Glu Arg Asp Phe Ser Glu Gln Asp Arg  
 48 145 150 155 160  
 50 Ile Val Gly Glu Leu Leu Gln Pro Gly Gly Tyr Leu Lys Leu Ile Glu  
 51 165 170 175  
 53 Leu Gly Leu Glu Asp Cys Val Lys Lys Ile Asp Ala Gln Arg Val Leu  
 54 180 185 190  
 56 Gly Tyr Val Leu Phe Lys Asp Gly Lys His Thr Lys Leu Ala Tyr Pro  
 57 195 200 205  
 59 Leu Glu Thr Phe Asp Ser Asp Val Ala Gly Arg Ser Phe His Asn Gly  
 60 210 215 220  
 62 Arg Phe Val Gln Arg Met Arg Glu Lys Ala Leu Thr Leu Ser Asn Val  
 63 225 230 235 240  
 65 Arg Leu Glu Gln Gly Thr Val Thr Ser Leu Leu Glu Glu His Gly Thr  
 66 245 250 255  
 68 Ile Lys Gly Val Arg Tyr Arg Thr Lys Glu Gly Asn Glu Phe Arg Ser  
 69 260 265 270  
 71 Phe Ala Pro Leu Thr Ile Val Cys Asp Gly Cys Phe Ser Asn Leu Arg

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Input Set : A:\Mtc678-1.txt

Output Set: N:\CRF3\07062001\I885723.raw

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72          275          280          285
74 Arg Ser Leu Cys Lys Pro Lys Val Asp Val Pro Ser Thr Phe Val Gly
75          290          295          300
77 Leu Val Leu Glu Asn Cys Glu Leu Pro Phe Ala Asn His Gly His Val
78 305          310          315          320
80 Val Leu Gly Asp Pro Ser Pro Ile Leu Met Tyr Pro Ile Ser Ser Ser
81          325          330          335
83 Glu Val Arg Cys Leu Val Asp Val Pro Gly Gln Lys Leu Pro Pro Ile
84          340          345          350
86 Ala Asn Gly Glu Met Ala Lys Tyr Leu Lys Thr Arg Val Ala Pro Gln
87          355          360          365
89 Val Pro Thr Lys Val Arg Glu Ala Phe Ile Thr Ala Val Glu Lys Gly
90          370          375          380
92 Asn Ile Arg Thr Met Pro Asn Arg Ser Met Pro Ala Asp Pro Ile Pro
93 385          390          395          400
95 Thr Pro Gly Ala Leu Leu Leu Gly Asp Ala Phe Asn Met Arg His Pro
96          405          410          415
98 Leu Thr Gly Gly Gly Met Thr Val Ala Leu Ala Asp Ile Val Val Leu
99          420          425          430
101 Arg Asp Leu Leu Arg Pro Ile Arg Asn Leu Asn Asp Lys Glu Ala Leu
102          435          440          445
104 Ser Lys Tyr Ile Glu Ser Phe Tyr Thr Leu Arg Lys Pro Val Ala Ser
105          450          455          460
107 Thr Ile Asn Thr Leu Ala Asp Ala Leu Tyr Lys Val Phe Leu Ala Ser
108 465          470          475          480
110 Ser Asp Glu Ala Arg Thr Glu Met Arg Glu Ala Cys Phe Asp Tyr Leu
111          485          490          495
113 Ser Leu Gly Gly Val Phe Ser Ser Gly Pro Val Ala Leu Leu Ser Gly
114          500          505          510
116 Leu Asn Pro Arg Pro Leu Ser Leu Val Leu His Phe Phe Ala Val Ala
117          515          520          525
119 Ile Tyr Ala Val Cys Arg Leu Met Leu Pro Phe Pro Ser Ile Glu Ser
120          530          535          540
122 Phe Trp Leu Gly Ala Arg Ile Ile Ser Ser Ala Ser Ser Ile Ile Phe
123 545          550          555          560
125 Pro Ile Ile Lys Ala Glu Gly Val Arg Gln Met Phe Phe Pro Arg Thr
126          565          570          575
128 Ile Pro Ala Ile Tyr Arg Ala Pro Pro
129          580          585

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131 &lt;210&gt; SEQ ID NO: 2

132 &lt;211&gt; LENGTH: 418

133 &lt;212&gt; TYPE: DNA

134 &lt;213&gt; ORGANISM: Arabidopsis thaliana

136 &lt;220&gt; FEATURE:

137 &lt;221&gt; NAME/KEY: Unsure

138 &lt;222&gt; LOCATION: (1)..(418)

139 &lt;223&gt; OTHER INFORMATION: n=a, c, g or t

142 &lt;400&gt; SEQUENCE: 2

W--&gt; 143 cttacgcgtg gttatngacg cttctcgcct ttgttctgac atggatgatt tttcacctca

60

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TIME: 11:52:48

Input Set : A:\Mtc678-1.txt

Output Set: N:\CRF3\07062001\I885723.raw

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145 tcaagatgaa gaaggcggca accggagatt tagaggccga ggcagaagca agaagagatg 120
W--> 147 gtgcaacgga tgtcatcatt gtngggggcgg gtgttgccagg cgctttctctt gcttatgcnt 180
W--> 149 tagctaagga tngacgacga gtacatgtga tagagangga cttaaaagag ccacaaagat 240
W--> 151 tcatgggaga nctgatgcaa ncgggagggtc gctttcatgt taagcccagc ttggcctcga 300
W--> 153 agattgttnt ggaggacatn gacgcacaag aatncgaaan cctttggcat atnccaagnn 360
W--> 155 tggaaacacg cgaaatggcc tttccanatt aaaagaantt tcctcatgag ccagtagg 418
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159 <211> LENGTH: 354
160 <212> TYPE: DNA
161 <213> ORGANISM: Arabidopsis thaliana
163 <220> FEATURE:
164 <221> NAME/KEY: Unsure
165 <222> LOCATION: (1)..(354)
166 <223> OTHER INFORMATION: n=a, c, g or t
169 <400> SEQUENCE: 3
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W--> 172 cacctcanca agatgaagaa ggcggcaacc ggagatttag aggccgaggc agaagcaaga 120
W--> 174 agagatgggt caacggatgt natcattgtt ggggcgggtn ttgcaggcgc ttctnttgct 180
W--> 176 tatncttttag ctaaggatgg acgacgagta catgtgatag agagggactt aaaagagcca 240
W--> 178 caaagattca tgggaganct gatgcaagcg gggagggtcgc ttcatgttag cccagnttgg 300
W--> 180 cctcgaagat tttttttgna gggcataaga cgnaccaana agcggaatnc cttt 354
183 <210> SEQ ID NO: 4
184 <211> LENGTH: 1829
185 <212> TYPE: DNA
186 <213> ORGANISM: Arabidopsis thaliana
188 <400> SEQUENCE: 4
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191 tgcctatgga cgctactcgc cttcatgctg acttggacag tgttctacgt cacaacagg 120
193 gggaagaagg cgacgcagtt ggcggatgcg gtggttgaag agcgagaaga cggtgctact 180
195 gacgttatca tcgttggggc tggagtaggc ggctcggctc tcgcatatgc tcttgctaag 240
197 gacgggctgc gagtccatgt aatagagagg gacctgagag aaccagagag aatcatgggt 300
199 gagtttatgc aaccaggagg acgactcatg ctctctaagc ttggtcttga agattgtttg 360
201 gagggaatag atgcccacaa agccacgggc atgacagtgt ataaggacgg aaaagaagca 420
203 gtcgcatctt tttccgtgga caacaacaat tttccttttg atccttcggc tcgatctttt 480
205 cacaatggcc gattcgtcca acgattgcgg caaaaggctt cttctcttcc caatgtgcgc 540
207 ctggaagaag gaacggtgaa gtctttgata gaagaaaaag gagtgatcaa aggagtgaca 600
209 taaaaaata gcgcaggcga agaaacaaca gccttggcac ctctcactgt agtatgcgac 660
211 ggttgctact caaaccttcg ccggtctctt aatgacaaca atgcggagggt tctgtcatac 720
213 caagttggtt ttatctcaaa gaactgtcag cttgaagaac ccgaaaagtt aaagttgata 780
215 atgtctaaac cctccttcac catgttgtat caaatcagca gcaccgacgt tcgttggtgt 840
217 tttgaagtgc tccccacaa cattccttct atttcaaagt gtgaaatggc tactttcgtg 900
219 aagaacacta ttgctcctca ggtaccttta aaactccgca aaatatTTTT gaaagggatt 960
221 gatgaaggag aacatataaa agccatgcca acaagaaga tgacagctac tttgagcgag 1020
223 aagaaggag tgattttatt gggagatgca ttcaacatgc gtcattccagc aatcgcatct 1080
225 ggaatgatgg ttttattatc tgacattctc attttacgcc gtcttctcca gccattaagc 1140
227 aaccttgcca atgcgcaaaa aatctcacia gttatcaagt ccttttatga tatccgcaag 1200
229 ccaatgtcag cgacagttaa cacgttagga aatgcattct ctcaagtgtc agttgcatcg 1260
231 acggacgaag caaaagaggc aatgagacaa ggttgctatg attacctctc tagtggtggg 1320
233 tttcgcacgt cagggatgat ggctttgcta ggcggcatga accctcgtcc gatctctctc 1380

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235 atctatcatc tatgtgctat cactctatcc tccattggcc atctactctc tccatttccc 1440
237 tctccccttg gcatttggca tagccttcga ctttttgggt tggctatgaa aatgttgggt 1500
239 ccccatctca aggctgaagg agttagccaa atgttggttc cagtcaacgc cgccgcgtat 1560
241 agcaaaagct atatggctgc aacggctctt taaaacactg gtgctttaaa ctgcaaaata 1620
243 taacacatat ataaatcccg aatctttgtg attctgcata tattgtgttc tacaattatt 1680
245 ctcatataaa tgaaaattgt tctacgtaaa agtaaaaaga aggaattgta atactaataa 1740
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253 <211> LENGTH: 530
254 <212> TYPE: PRT
255 <213> ORGANISM: Arabidopsis thaliana
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262 Phe Thr Asn Val Cys Leu Trp Thr Leu Leu Ala Phe Met Leu Thr Trp
263 20 25 30
265 Thr Val Phe Tyr Val Thr Asn Arg Gly Lys Lys Ala Thr Gln Leu Ala
266 35 40 45
268 Asp Ala Val Val Glu Glu Arg Glu Asp Gly Ala Thr Asp Val Ile Ile
269 50 55 60
271 Val Gly Ala Gly Val Gly Gly Ser Ala Leu Ala Tyr Ala Leu Ala Lys
272 65 70 75 80
274 Asp Gly Arg Arg Val His Val Ile Glu Arg Asp Leu Arg Glu Pro Glu
275 85 90 95
277 Arg Ile Met Gly Glu Phe Met Gln Pro Gly Gly Arg Leu Met Leu Ser
278 100 105 110
280 Lys Leu Gly Leu Glu Asp Cys Leu Glu Gly Ile Asp Ala Gln Lys Ala
281 115 120 125
283 Thr Gly Met Thr Val Tyr Lys Asp Gly Lys Glu Ala Val Ala Ser Phe
284 130 135 140
286 Pro Val Asp Asn Asn Asn Phe Pro Phe Asp Pro Ser Ala Arg Ser Phe
287 145 150 155 160
289 His Asn Gly Arg Phe Val Gln Arg Leu Arg Gln Lys Ala Ser Ser Leu
290 165 170 175
292 Pro Asn Val Arg Leu Glu Glu Gly Thr Val Lys Ser Leu Ile Glu Glu
293 180 185 190
295 Lys Gly Val Ile Lys Gly Val Thr Tyr Lys Asn Ser Ala Gly Glu Glu
296 195 200 205
298 Thr Thr Ala Leu Ala Pro Leu Thr Val Val Cys Asp Gly Cys Tyr Ser
299 210 215 220
301 Asn Leu Arg Arg Ser Leu Asn Asp Asn Asn Ala Glu Val Leu Ser Tyr
302 225 230 235 240
304 Gln Val Gly Phe Ile Ser Lys Asn Cys Gln Leu Glu Glu Pro Glu Lys
305 245 250 255
307 Leu Lys Leu Ile Met Ser Lys Pro Ser Phe Thr Met Leu Tyr Gln Ile
308 260 265 270
310 Ser Ser Thr Asp Val Arg Cys Val Phe Glu Val Leu Pro Asn Asn Ile
311 275 280 285

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TIME: 11:52:48

Input Set : A:\Mtc678-1.txt

Output Set: N:\CRF3\07062001\I885723.raw

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313 Pro Ser Ile Ser Asn Gly Glu Met Ala Thr Phe Val Lys Asn Thr Ile
314      290      295      300
316 Ala Pro Gln Val Pro Leu Lys Leu Arg Lys Ile Phe Leu Lys Gly Ile
317 305      310      315      320
319 Asp Glu Gly Glu His Ile Lys Ala Met Pro Thr Lys Lys Met Thr Ala
320      325      330      335
322 Thr Leu Ser Glu Lys Lys Gly Val Ile Leu Leu Gly Asp Ala Phe Asn
323      340      345      350
325 Met Arg His Pro Ala Ile Ala Ser Gly Met Met Val Leu Leu Ser Asp
326      355      360      365
328 Ile Leu Ile Leu Arg Arg Leu Leu Gln Pro Leu Ser Asn Leu Gly Asn
329      370      375      380
331 Ala Gln Lys Ile Ser Gln Val Ile Lys Ser Phe Tyr Asp Ile Arg Lys
332 385      390      395      400
334 Pro Met Ser Ala Thr Val Asn Thr Leu Gly Asn Ala Phe Ser Gln Val
335      405      410      415
337 Leu Val Ala Ser Thr Asp Glu Ala Lys Glu Ala Met Arg Gln Gly Cys
338      420      425      430
340 Tyr Asp Tyr Leu Ser Ser Gly Gly Phe Arg Thr Ser Gly Met Met Ala
341      435      440      445
343 Leu Leu Gly Gly Met Asn Pro Arg Pro Ile Ser Leu Ile Tyr His Leu
344      450      455      460
346 Cys Ala Ile Thr Leu Ser Ser Ile Gly His Leu Leu Ser Pro Phe Pro
347 465      470      475      480
349 Ser Pro Leu Gly Ile Trp His Ser Leu Arg Leu Phe Gly Leu Ala Met
350      485      490      495
352 Lys Met Leu Val Pro His Leu Lys Ala Glu Gly Val Ser Gln Met Leu
353      500      505      510
355 Phe Pro Val Asn Ala Ala Ala Tyr Ser Lys Ser Tyr Met Ala Ala Thr
356      515      520      525
358 Ala Leu
359      530

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361 &lt;210&gt; SEQ ID NO: 6

362 &lt;211&gt; LENGTH: 2038

363 &lt;212&gt; TYPE: DNA

364 &lt;213&gt; ORGANISM: Arabidopsis thaliana

366 &lt;400&gt; SEQUENCE: 6

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367 gaattcccg gtcgaccac gcgtccgcg acgcgtggga ttgagaacaa atagatttgg      60
369 ttatatatgg cttttacgca cgtttggtta tggacgttag tcgccttcgt gctgacgtgg      120
371 acggtgttct accttaccaa catgaagaag aaggcgacgg atttggtgta tacggtggct      180
373 gaggatcaaa aagacggtgc tgctgacgtc attatcgctg gggctggtgt aggtggttcg      240
375 gctctcgcat atgctcttgc taaggatggg cgctcgagta atgtgatcga gagggacatg      300
377 agagaaccag aaagaatgat ggggtgagttt atgcaacctg gcggacgact catgctttct      360
379 aaacttggcc ttcaagattg cttggaagac atagatgcac agaaagccac gggtttggca      420
381 gtttataaag atggaaaaga agcagacgca ctttttccag tggataacaa caatttttct      480
383 tatgaacctt ctgctcgatc ttttcacaat ggccgattcg tccaacaact gcgtcgaaag      540
385 gcttttttct tttccaatgt gcgcctggaa gaaggaacgg tgaagtcttt actagaagaa      600
387 aaaggagtgg tcaaaggagt gacatacaag aataaagaag gcgaagaaac aacagccttg      660
389 gcacctctca ctgtggtatg cgacggttgc tactcaaacc ttcgtcggtc tcttaatgat      720

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FYI:

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a c rresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least ne n or Xaa.

## VERIFICATION SUMMARY

PATENT APPLICATION: US/09/885,723

DATE: 07/06/2001

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Input Set : A:\Mtc678-1.txt

Output Set: N:\CRF3\07062001\I885723.raw

L:9 M:270 C: Current Application Number differs, Replaced Current Application No

L:9 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:143 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:147 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:149 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:151 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:153 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:155 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:172 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:174 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:176 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:178 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:180 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:615 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10

L:617 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10

L:654 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11

L:657 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11